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EXAMINER

LUONG, VINH

ART UNIT PAPER NUMBER

3682

DATE MAILED: 09/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,176

Applicant(s)

MEFFE ET AL.

Examiner

Vinh T. Luong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 6,25 and 26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

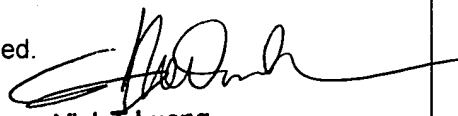
Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 June 2006 and 6/26/03 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


Vinh T. Luong
Primary Examiner

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. The Amendment filed on June 19, 2006 has been entered.
2. Applicant's election without traverse of group I and the species of Fig. 3 in the reply filed on January 11, 2006 is acknowledged.
3. Claims 6, 25, and 26 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention and/or species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on January 11, 2006.
4. The drawings were received on June 19, 2006. These drawings are not accepted by the Examiner because the drawings do not comply with 37 CFR 1.121(e) and 1.84. For example:
 - (a) The amended paragraph [0049] of the specification describes the grease 7, however, the drawings do not show the referential character 7. See 37 CFR 1.84(p)(5); and
 - (b) The material of the bearing cartridge 308 is not shown by hatchings in the cross-sectional view in Figs. 3 and 5. See 37 CFR 1.84(h)(3).
5. The *original* drawings are objected to because: (a) the cross section, such as, Fig. 3 or 5 must be set out and draw to show all of the materials as they are shown in the view from which the cross section was taken. 37 CFR 1.84(h)(3). For example, the materials of the races 304 and 306 are required to be shown by proper hatchings; and (b) each part of the invention, e.g., the lubricant in claims 12, 13, and 22 should be designated by a referential numeral or character.

Corrected drawing sheets *in compliance with 37 CFR 1.121(d)* are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should

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not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claimed feature, such as, the lubrication in claims 12, 13, and 22 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

7. The disclosure is objected to because of the following informalities: the disclosure is inconsistent with the drawings. See 37 CFR 1.121(e). For example, amended paragraph [0049] of the specification describes the grease 7, however, the drawings do not show the referential character 7. Appropriate correction is required.

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 12, 13, and 22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the

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relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 12, 13, and 22 claim the control system providing selective control of the control voltage to distribute the lubrication in the bearing. However, the drawings do not show, *inter alia*, the lubrication, the lubrication reservoir, the lubrication conduits, etc. and how the lubrication is distributed in the bearing. It is unclear as to how the control system controls the voltage to distribute the lubrication in the bearing as claimed.

10. Claims 1-5, 7, 8, 17-21, 23, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Perni et al. (EP 1 134 443 A2 cited as reference X in the International Search Report disclosed by Applicant).

Regarding claim 1, Perni teaches a preload adjustment device, the device comprising:

a) a piezodynamic preload spacer 22, the piezodynamic preload spacer 22 coupled to a bearing 10 (Figs. 1, 6, and 7) in a momentum control device 2 (Fig. 1), the piezodynamic preload spacer 22 configured such that an application of a control voltage to the piezodynamic preload spacer 22 causes a change in a dimension of the piezodynamic preload spacer 22, and wherein the piezodynamic preload spacer 22 is configured such that a change in the dimension of the piezodynamic preload spacer 22 changes a preload of the bearing 10; and

b) a control system 4-6 (Fig. 8 and claims 1-14), the control system 4-6 providing selective control of the control voltage to selectively control the preload on the bearing 10. See paragraphs [0014], [0028]-[0033], and claims 1-14.

Regarding claim 2, the piezodynamic preload spacer 22 is located adjacent the bearing 10 (Figs. 1, 6, and 7).

Regarding claim 3, the bearing 10 comprises a duplex bearing pair 43 and 44 and wherein piezodynamic preload spacer 22 is located between the duplex bearing pair 43 and 44.

Regarding claim 4, the piezodynamic preload spacer 22 comprises a ring shaped spacer 22 having a thickness (Fig. 1), and wherein the application of the control voltage to the piezodynamic preload spacer 22 causes a change in the thickness.

Regarding claim 5, the piezodynamic preload spacer 22 comprises a piezoelectric material. See paragraph [0019].

Regarding claim 7, the momentum control device 2 comprises a reaction wheel 2 (Fig. 1).

Regarding claim 8, the momentum control device 2 comprises a control moment gyroscope 2.

Regarding claim 17, Perni teaches a preload adjustment device for adjusting preload in a duplex bearing 10 in a momentum control device 2, the duplex bearing 10 including a first bearing race 43 and a second bearing race 44 (Figs. 6 and 7), the preload adjustment device comprising:

a) a piezodynamic preload spacer 22, the piezodynamic preload spacer 22 coupled between the first bearing race 43 and the second bearing race 44, the piezodynamic preload spacer 22 configured such that an application of a control voltage to the piezodynamic preload spacer 22 causes a change in a dimension of the piezodynamic preload spacer 22, and wherein the piezodynamic preload spacer 22 is configured such that a change in the dimension of the piezodynamic preload spacer 22 changes the preload of the duplex bearing 10; and

b) a control system (Fig. 8), the control system providing selective control of the control voltage to selectively control the preload on the bearing 10.

Regarding claim 18, the piezodynamic preload spacer 22 comprises a ring shaped spacer 22 having a thickness, and the application of the control voltage to the piezodynamic preload spacer 22 causes a change in thickness.

Regarding claim 19, the control system inherently provides selective control of the control voltage to control the preload to compensate for changes in operating environment. See, *e.g.*, paragraphs [0011]-[0015] and claims 1-14.

Regarding claim 20, the control system inherently provides selective control of the control voltage to control the preload to compensate for wear in the bearing. See, *e.g.*, paragraphs [0011]-[0015] and claims 1-14.

Regarding claim 21, the control system inherently provides selective control of the control voltage to control the preload to compensate for thermal expansion in the bearing. See, *e.g.*, paragraph [0032].

Regarding claim 23, the control system inherently increases preload during a launch of the momentum control device 2 into space.

Regarding claim 24, the piezodynamic preload spacer 22 is inherently configured to provide an optimal operating preload for operating in space with a low control voltage and an increased preload with a high control voltage.

11. Claims 1 and 9-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Kudo et al. (US Patent No. 6,286,374 B1).

Regarding claim 1, Kudo teaches a preload adjustment device, the device comprising:

a) a piezodynamic preload spacer 22, 23, the piezodynamic preload spacer 22, 23 coupled to a bearing 10 in a momentum control device 100, the piezodynamic preload spacer 22,

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23 configured such that an application of a control voltage to the piezodynamic preload spacer 22, 23 causes a change in a dimension of the piezodynamic preload spacer 22, 23, and wherein the piezodynamic preload spacer 22, 23 is configured such that a change in the dimension of the piezodynamic preload spacer 22, 23 changes a preload of the bearing 10; and

b) a control system (Figs. 2 and 3), the control system providing selective control of the control voltage to selectively control the preload on the bearing 10. *Ibid.*, col. 6, line 18 through col. 10, line 35 and claims 1-14.

Regarding claim 9, the control system provides selective control of the control *voltage* to control the preload to compensate for changes in operating environment. See Kudo's Summary of the Invention and, *e.g.*, the matching transformer in Fig. 2.

Regarding claim 10, the control system provides selective control of the control *voltage* to control the preload to compensate for wear in the bearing 10. See, *e.g.*, the matching transformer in Fig. 2.

Regarding claim 11, the control system provides inherently selective control of the control *voltage* to control the preload to compensate for thermal expansion in the bearing 10. See, *e.g.*, the matching transformer in Fig. 2.

Regarding claim 12, the control system inherently provides selective control of the control *voltage* to distribute lubrication (*i.e.*, slippage) in the bearing 10. See col. 1, lines 11-21 and, *e.g.*, the matching transformer in Fig. 2.

Regarding claim 13, the control system (Figs. 2 and 3) inherently provides a varying control voltage to distribute the lubrication (*i.e.*, slippage) in the bearing 10.

Regarding claim 14, the control system inherently increases preload during a launch of the momentum control device 100 into space.

Regarding claim 15, the piezodynamic preload spacer 22, 23 is inherently configured to provide a reduced preload with a low control voltage and an increased preload with a high control voltage.

Regarding claim 16, the reduced preload inherently comprises an optimal operating preload (Fig. 3).

12. Claims 1-5, 7-11, 14-21, 23, and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Fleury et al. (USP 6,505,968 B1 filed on February 16, 2000).

Regarding claim 1, Fleury teaches a preload adjustment device, the device comprising:

a) a piezodynamic preload spacer 208, 212, 305, 307, etc., the piezodynamic preload spacer 208, 212, 305, 307, etc. coupled to a bearing 205-207, 405-407, etc. in a momentum control device 200, 400, 800, 900, 1000, the piezodynamic preload spacer 208, 212, 305, 307, etc. configured such that an application of a control voltage to the piezodynamic preload spacer 208, 212, 305, 307, etc. causes a change in a dimension of the piezodynamic preload spacer 208, 212, 305, 307, etc., and wherein the piezodynamic preload spacer 208, 212, 305, 307, etc., is configured such that a change in the dimension of the piezodynamic preload spacer 208, 212, 305, 307, etc. changes a preload of the bearing 205-207, 405-407, etc.; and

b) a control system 600, the control system 600 providing selective control of the control voltage to selectively control the preload on the bearing 205-207, 405-407, etc. See abstract, col. 8, line 53 through col. 9, line 2, and claims 1-11.

Regarding claim 2, the piezodynamic preload spacer 208, 212, 305, 307, etc. is located adjacent the bearing 205-207, 405-407, etc.

Regarding claim 3, the bearing comprises a duplex bearing pair 906 and 907 and wherein piezodynamic preload spacer 904 is located between the duplex bearing pair 906 and 907. *Ibid*, col. 10, line 52 through col. 11, line 31.

Regarding claim 4, the piezodynamic preload spacer comprises a ring shaped spacer 804, 806 (Fig. 8) having a thickness, and wherein the application of the control voltage to the piezodynamic preload spacer 804, 806 causes a change in the thickness.

Regarding claim 5, the piezodynamic preload spacer comprises a piezoelectric material.

Regarding claim 7, the momentum control device comprises a reaction wheel 200, 400, 800, etc.

Regarding claim 8, the momentum control device 2 comprises a control moment gyroscope 200, 400, 800, etc.

Regarding claim 9, the control system provides selective control of the control *voltage* to control the preload to compensate for changes in operating environment. See abstract, back ground and summary of the invention, col. 8, line 53 through col. 9, line 2, and claims 1-11.

Regarding claim 10, the control system provides selective control of the control *voltage* to control the preload to compensate for wear in the bearing. See abstract, back ground and summary of the invention, col. 8, line 53 through col. 9, line 2, and claims 1-11.

Regarding claim 11, the control system provides inherently selective control of the control *voltage* to control the preload to compensate for thermal expansion in the bearing.

Regarding claim 14, the control system inherently increases preload during a launch of the momentum control device 100 into space.

Regarding claim 15, the piezodynamic preload spacer is inherently configured to provide a reduced preload with a low control voltage and an increased preload with a high control voltage.

Regarding claim 16, the reduced preload inherently comprises an optimal operating preload.

Regarding claims 17 and 18, see regarding claims 3 and 4 above.

Regarding claim 19, the control system inherently provides selective control of the control voltage to control the preload to compensate for changes in operating environment.

Regarding claim 20, the control system inherently provides selective control of the control voltage to control the preload to compensate for wear in the bearing.

Regarding claim 21, the control system inherently provides selective control of the control voltage to control the preload to compensate for thermal expansion in the bearing.

Regarding claim 23, the control system inherently increases preload during a launch of the momentum control device into space.

Regarding claim 24, the piezodynamic preload spacer is inherently configured to provide an optimal operating preload for operating in space with a low control voltage and an increased preload with a high control voltage:

13. Claims 12, 13, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fleury in view of Karamata.

Regarding claims 12, 13, and 22, Fleury teaches the invention substantially as claimed. However, Fleury does not teach the control system to distribute lubrication in the bearing.

Karamata teaches the control system 25 in order to distribute lubrication in the bearing 27. See col. 6, lines 13-17.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the control system of Fleury in order to distribute lubrication in the bearing of Fleury as taught or suggested by Karamata.

14. Claims 1 and 17 are rejected under 35 U.S.C. 102(e) as being *clearly* anticipated by Wu et al. (USP 6,422,757 B1 filed on December 15, 2000).

15. Claim 1 and 17 are rejected under 35 U.S.C. 102(b) as being *clearly* anticipated by Moseley et al. (USP 4,850,719).

See piezodynamic preload spacer 60 coupled between first and second bearing races 32 and 34 in a momentum control device 10, and control system described in col. 2, lines 13-24.

16. Claim 1 is rejected under 35 U.S.C. 102(b) as being *clearly* anticipated by Golz (EP 0 377 145 A2)

See piezodynamic preload spacer 12 coupled to a bearing 8 and 9 in a momentum control device 7, and control system described in the English abstract and shown in Fig. 4.

17. Claims 1-5, 7, 8, 17, and 18 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 7, 8, 14, and 15 of copending Application No. 10608174 (hereinafter Appl.'174). Although the conflicting claims are not identical, they are not patentably distinct from each other because the two applications recite essentially same structures. In fact, Applicant apparently uses different terminology in

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order to claim essentially the same invention. *In re Griswold*, 150 USPQ 804 (CCPA 1966).

For example, see the comparison of claim 1 of this application and claim 1 of Appl.'174 below:

<u>Common</u>	<u>Appl.'174</u>	<u>Appl.'176</u>
a piezodynamic spacer		
a bearing		
	tuning system	control system

The control system claimed in this application inherently is the tuning system since when the control system selectively controls the preload on the bearing, it inherently absorbs the vibrations or *vice versa*. This fact is well known as seen, *e.g.*, US Patent No. 6,286,374 issued to Kudo, claim 11 of US Patent No. 6,505,968 issued to Fleury et al., and other references cited in the record. It would have been obvious to one having ordinary skill in the art to use the control system claimed in this application as the tuning system claimed in Appl.'174 or *vice versa* as taught or suggested by common knowledge in the art.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

18. Applicant's arguments filed June 19, 2006 have been fully considered but they are not persuasive.

Objection to the Drawings

The objection to the drawings is reiterated because the replacement drawings are unacceptable for the reasons set forth in paragraph 4 above.

Objection to the Claims

The objection to claim 4 is withdrawn in view of the amendment.

Rejection under 35 USC 112

Applicant stated that: (a) claims 12, 13, and 22 were filed with the original disclosure; and (b) the specification adequately describes how the recited preloaded adjustment device could be used to distribute lubrication in the bearing (e.g., paragraphs 0049-0051).

The Examiner respectfully submits that the instant rejection under 35 USC 112, first paragraph, is not based on new matter. It is based on inadequate disclosure. The fact that claims 12, 13, and 22 were filed with the original disclosure does not automatically mean that these claims were described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Paragraphs 0049-0051 do not describe as to how the adjusting of the preload of the bearing during operation cause the redistribution of the lubrication in the bearing as claimed. In fact, these paragraphs merely state conclusory statements, such as, "By providing an appropriate high frequency control signal, the piezodynamic preload spacer can be made to provide the high frequency vibration that will more quickly redistribute the lubrication." The detailed description or illustration of a lubrication reservoir and/or conduits, the relationship between the frequency control signal and the lubrication, and how the *varying control voltage distributes the lubrication from the reservoir to the conduits and finally to the bearing* is required to be described.

Our reviewing Court has pointed out that "it is not a question of whether one skilled in the art *might* be able to construct the patentee's device from the teaching of the disclosure. . . . Rather, it is a question whether the application necessarily discloses that particular device." *Lockwood v. American Airlines, Inc.*, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997) and cases cited

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therein. “It is not sufficient for purposes of the written description requirement of 112 that the disclosure, when combined with the knowledge in the art, would lead one to *speculate* as to modifications that the inventor might have envisioned, but failed to disclose. Each application in the chain *must* describe the claimed features.” (Emphasis added). *Lockwood* at 1966.

Applying this rule to the instant case, Applicant’s claims 12, 13, and 22 specifically call for “the control system provides a varying control voltage to distribute the lubrication in the bearing.” Therefore, Applicant must describe how the varying control voltage affects the lubrication such that the varying control voltage renders the lubrication flowing from the reservoir to the conduits and finally to the bearing as claimed.

For the above reasons, Applicant’s request to withdraw the rejection under 35 USC 112, first paragraph, is respectfully denied.

Rejections under 35 USC 102 and 103

Perni et al.

Applicant contended that Perni fails to teach a momentum control device.

At the outset, the Examiner respectfully submits that Perni was cited as an X reference in Applicant’s corresponding PCT application, *i.e.*, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone under PCT rules.

Returning to the case at hand, Applicant apparently uses an “*ipsissimis verbis*” test that requires the same terminology in the art in order to find anticipation. See footnote 11 of *AKZO N.V. v. International Trade Commission*, 1 USPQ2d 1241, 1245 (CAFC 1986). The law allows an inventor to be his/her own lexicographer. More importantly, it is well settled that an

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anticipatory reference needs not duplicate word for word what is in the claims. Anticipation can occur when a claimed limitation is “inherent” or otherwise implicit in the relevant reference. *Standard Haven Products Inc. v. Gencor Industries, Inc.*, 21 USPQ2d 1321, 1328 (Fed. Cir. 1991). In other words, an anticipatory reference needs not provide such explanation to anticipate what artisan would know as evidenced by standard textbook. *In re Opprecht*, 12 USPQ2d 1235 (Fed. Cir. 1989). It is well settled that although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Anticipation law requires distinction be made between invention described or taught and invention claimed. It does not require that the reference “teach” what subject patent application teaches, it is only necessary that the claim under attack, as construed by the Court, “read on” something disclosed in the reference, *i.e.*, all limitations of the claim are found in reference, or are “fully met” by it. *Kalman v. Kimberly Clark Corp.*, 218 USPQ 781, 789 (CAFC 1983).

Perni does not need to use the term “a momentum control device” as Applicant uses. In addition, standard Physics text book, such as, *Halliday Resnick, Physics, Parts I & II, 1967*, pp 299-305 attached, provides the explanation that the rigid body such as the body 2 of Perni is subjected to angular momentum when it rotates about its axis. Since Perni’s device 2 is for measuring and adjusting pre-loading on bearings, mounting and operating loads, etc. as explicitly described in, *e.g.*, the abstract and claims 1-14, and since Perni’s device 2 is inherently subjected to the angular momentum based on standard knowledge from textbook, thus, it “reads on” the claimed “momentum control device.”

Second, Applicant asserts “[i]n contrast, momentum control devices, as described in applicant’s specification, are *used to* provide a torque for attitude control to spacecraft and other vehicles.” (Emphasis added).

As set forth above, during the prosecution, the limitations from the specification are not read into the claims. Moreover, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). See also *In re Schoenwald*, 22 USPQ2d 1671 (CAFC 1992). In addition, functional limitations of a claim may not be given patentable weight where those limitations are inherent in a prior art reference. *In re Schreiber*, 44 USPQ2d 1429 (CAFC 1997).

In the instant case, Perni’s device is useable in spacecraft in order to provide a torque for attitude control to spacecraft and other vehicles. Further, Applicant’s contention is not based on the limitations appearing in the amended claim. Indeed, Applicant’s claims do not mention about the spacecraft and other vehicles. Therefore, these arguments are immaterial to the patentability of the claims. *In re Self*, 213 USPQ 1, 5 (CCPA 1982).

Third, Applicant contended that two types of momentum control device are reaction wheels and control moment gyroscopes as seen in paragraphs 0003 and 0004, and claims 7 and 8. However, claims 7 and 8 do not recite any specific structure that performs the function of the reaction wheel or gyroscope. On the other hand, Perni’s member 2 is shaped as a wheel as seen in Fig. 1, thus, Perni’s member 2 “reads on” the claimed reaction wheel. Similarly, Perni’s

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member 2 can also gyrate or revolve around its central axis as seen in Figs. 1, 6, and 7, thus, it “reads on” Applicant’s claimed gyroscope. *Kalman v. Kimberly Clark Corp.* and *In re Schreiber, supra*.

For the foregoing reasons, Applicant’s claims 1-5, 7, 8, 17-21, 23, and 24 are anticipated by Perni.

Kudo et al.

First, in the same line of arguments, Applicant asserts that Kudo fails to teach a momentum control device.

Kudo as well as Perni does not need to use the term “a momentum control device” as Applicant uses. The standard Physics textbook, such as, *Halliday Resnick, supra* provides the explanation that the rigid body 100 of Kudo is subjected to angular momentum when it rotates about its axis. Since Kudo’s device 100 is for measuring and adjusting pre-loading on bearings, mounting and operating loads, *etc.* as explicitly described in, *e.g.*, the abstract, summary of invention and claims 1-14, and since Kudo’s device 100 is inherently subjected to the angular momentum based on standard knowledge from textbook, thus, it is the so-called “momentum control device.”

Second, with respect to Applicant’s arguments that Kudo fails to teach the use of a piezodynamic preload spacer in a momentum control device, the law is well settled that when all of the elements of the claim are found in one prior art reference, the claim is invalid, and the invention is said to be anticipated as a matter of law. This is true, even if the intended use of the anticipating device is different from the intended use of the claimed device. *Mathis v. Hydro Air Industries*, 1 USPQ2d 1513, 1523 (DC C Calif. 1986) and cases cited therein. See also *In re*

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Casey, *In re Otto*, and *In re Schoenwald*, *supra*. Therefore, Applicant's arguments relied on intended use is unpersuasive.

For the foregoing reasons, Applicant's claims 1 and 9-16 are anticipated by Kudo.

Fleury et al.

First, using similar arguments, Applicant asserts that Fleury fails to teach a momentum control device.

The standard Physics textbook, such as, *Halliday Resnick*, *supra* provides the explanation that the rigid body 200, 400, etc. of Fleury is subjected to angular momentum when it rotates about its axis. Since Fleury's device 200, 400, etc. is for measuring and adjusting pre-loading on bearings, mounting and operating loads, *etc.* as explicitly described in, *e.g.*, the abstract, summary of invention and claims 1-11, and since Fleury's device 200, 400, etc. is inherently subjected to the angular momentum based on standard knowledge from textbook, thus, it is the so-called "momentum control device."

Second, Applicant argued that Fleury's elements 200, 400, etc. are bearing assemblies for use in the spindle motor of a disc drive, thus, Fleury fails to teach *the use* of a piezodynamic preload spacer in a momentum control device.

On the one hand, Fleury's piezodynamic preload spacer is capable of being used for a momentum control device. On the other hand, the law is well settled that when all of the elements of the claim are found in one prior art reference, the claim is invalid, and the invention is said to be anticipated as a matter of law. This is true, even if the intended use of the anticipating device is different from the intended use of the claimed device. *Mathis v. Hydro Air Industries*, 1 USPQ2d 1513, 1523 (DC C Calif. 1986) and cases cited therein. See also *In re*

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Casey, In re Otto, and *In re Schoenwald, supra*. Therefore, Applicant's arguments relied on intended use is unpersuasive.

For the foregoing reasons, Applicant's claims 1-5, 7-11, 14-21, 23, and 24 are anticipated by Fleury.

Fleury in view of Karamata

Applicant contended that while Karamata describes a lubrication system, it does not describe a control system adapted for use with piezodynamic preload system.

In response to Applicant's above arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Precedent has recognized that "[t]he suggestion or motivation to combine references does not have to be stated expressly; rather it may be shown by reference to the prior art itself, to the nature of the problem solved by the claimed invention, or to the knowledge of one of ordinary skill in the art." *In re Johnston*, 77 USPQ2d 1788 (Fed. Cir. 2006) cited *Medical Instrumentation and Diagnostics Corp v. Elekta AB*, 344 F.3d 1205, 1221-22 [68 USPQ2d 1263] (Fed. Cir. 2003).

In the instant case, Fleury and Karamata are in the same field of endeavor, i.e., rotary bearings. It is common knowledge in the art that the bearings require lubrication to avoid wear and tear. Therefore, when one confronts with the problem of lubrication of Fleury's bearings, one would look into the solution offered by Karamata. The suggestion or motivation to combine Fleury and Karamata flows naturally from "the nature of the problem solved by the claimed invention, or to the knowledge of one of ordinary skill in the art."

For the foregoing reasons, Applicant's claims 12, 13, and 22 are obvious by Fleury in view of Karamata.

Wu et al.

Similarly, Applicant asserted that Wu fails to teach a momentum control device.

Wu teaches the use of a piezodynamic preload spacer in a momentum control device because: (a) based on standard knowledge from textbook, Wu's spindle 1 is inherently subjected to the angular momentum, thus, it is the so-called "momentum control device;" and (b) Wu's piezodynamic preload assembly 6 is for measuring and adjusting pre-loading on bearings, mounting and operating loads, *etc.* as explicitly described in, *e.g.*, the abstract, summary of invention and claims 1-10.

For the foregoing reasons, Applicant's claims 1 and 17 are anticipated by Wu.

Moseley et al.

Applicant asserted that Moseley fails to teach a momentum control device.

Standard Physics textbook, such as, *Halliday Resnick, supra* provides the explanation that the rigid body 24 of Moseley is subjected to angular momentum when it rotates about its axis. Therefore, Moseley's element 24 "reads on" the momentum control device.

Golz

Applicant contended that the Examiner offered no details of the rejection under 35 USC 102 based on Golz (EP 0 377 145).

The Examiner respectfully submits that Golz is also cited as an X reference in Applicant's corresponding PCT application. The teachings of Golz are explained in its English

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Abstract and clearly shown in Fig. 1. In this Office action, the Examiner offered the details of the rejection as seen above.

Further, Applicant asserted that Golz fails to teach a momentum control device.

Standard Physics text book, such as, *Halliday Resnick, supra* provides the explanation that the rigid body such as the body 7 of Golz is subjected to angular momentum when it rotates about its axis. Therefore, Golz's element 7 "reads on" the momentum control device.

Finally, Golz was used to reject Applicant's claim 1 only. Therefore, Applicant's arguments regarding other claims, such as, 17, 9, 10, etc. are immaterial.

Obviousness-type Double Patenting

Applicant contended the "tuning system" of the claims in copending Application No. 10/608,174 is implemented to provide selective control of a resonant frequency of the vibration damping device such that the vibration damping device absorbs vibrations in a selected frequency range, meanwhile, the present claims call for a control system that provides selective control of the preload on the bearings, with no mention of vibration, *i.e.*, completely different purpose and implementation, therefore, they are patentably distinct.

The Examiner respectfully submits that the device disclosed in Appl.'174 is strikingly similar, if not identical to the device disclosed in this Application. There is a reason to believe, based on the similarities of the devices disclosed in this Application and Appl.'174, that the functional limitations recited in the claims of Appl.'174 may be an inherent characteristics of the device in this Application or *vice versa*. In accordance with *In re Best*, 195 USPQ 430, 433 (CCPA 1977) cited in MPEP 2112:

Where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possess the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on.

Accordingly, Applicant is respectfully urged to prove that the functional limitations claimed in this application are not inherent characteristics of the claimed device in Appl.'174 or *vice versa*.

Applicant further contended that the claims in this application call for different purposes, *i.e.*, different intended uses. Based on legal precedents, the intended use statements in the claims of Appl.'174 and the claims of this application do not provide patentable distinguishing structures over each other. *Mathis v. Hydro Air Industries, In re Casey, In re Otto, and In re Schoenwald, supra*. Therefore, the obviousness type double patenting rejection is respectfully maintained.

Lastly, Applicant argued that the Examiner has not provided the evidence to prove that the absorbing vibration inherently controls the preload or *vice versa*. The Examiner respectfully provides the cited technical literature hereby, such as, the technical papers "Active Vibration Isolation System for Launch Load Alleviation" of Evert et al. and of NASA GLTRS, plus the US Patents issued to Sandercock, Bullard, and Olson to prove that the absorbing vibration inherently controls the preload or *vice versa*. See also the prior art cited in copending Appl.'174.

For the foregoing reasons, the previous rejections are maintained.

19. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

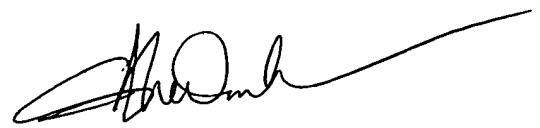
20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vinh T. Luong whose telephone number is 571-272-7109. The examiner can normally be reached on Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Luong

September 5, 2006



Vinh T. Luong
Primary Examiner